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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,357	11/07/2001	Chang-Soo Park	TJK/ 203/LW	9767
27717	7590	07/13/2004	EXAMINER	
SEYFARTH SHAW 55 EAST MONROE STREET SUITE 4200 CHICAGO, IL 60603-5803			ZERVIGON, RUDY	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

cf

Office Action Summary	Application No.	Applicant(s)	
	10/039,357	PARK ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-16 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-16 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 1, 2004, March 15, 2004 have been entered.

Drawings

2. New corrected drawings are required in this application because Applicant states in the June 2004 response that a "revised figure 3A" was filed. No such new figure is present in the image file wrapper. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 2, 7, 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui et al (USPat. 5,002,928) in view of Sajoto (USPat. 6,056,823). Fukui teaches an apparatus (Figure 1; column 4, lines 19-48) for forming a thin film (column 2, lines 14-36), comprising:

Art Unit: 1763

- i. a reaction chamber (14; column 5, lines 1-2) having a top portion, a sidewall portion and a bottom portion; a gas injector (1, 12; column 4, lines 60-69) penetrating the top portion and letting a source element pass therethrough; a distributor (7, Figure 1; column 4, lines 19-48) connected to the gas injector (1, 12; column 4, lines 60-69), wherein a plurality of injection holes (see material conduits 9, 11, and 12; Figure 1) are formed in the distributor (7, Figure 1; column 4, lines 19-48) and the source element is injected through the plurality of injection holes (see material conduits 9, 11, and 12; Figure 1); and a substrate (17, Figure 1) heating member (16; Figure 1; column 4, lines 60-68) positioned in a reaction space (container 14) defined by the top, bottom and sidewall portions of the reaction chamber (14; column 5, lines 1-2), and arranged below the distributor (7, Figure 1; column 4, lines 19-48), as claimed by claim 1
- ii. a ram (15, Figure 1; column 4, lines 60-69) that is mounted through the bottom portion of the reaction chamber (14; column 5, lines 1-2) to support the substrate (17, Figure 1) heating member (16; Figure 1; column 4, lines 60-68), as claimed by claim 2
- iii. the distributor (7, Figure 1; column 4, lines 19-48) includes a first portion (cylindrical portion of 7) having a cylindrical portion and a second portion (truncated cone portion of item 7) shaped like a truncated cone, as claimed by claim 1
- iv. the substrate (17, Figure 1) heating member (16; Figure 1; column 4, lines 60-68) is positioned at the center (Figure 1) of the reaction space (container 14) and the gas injector (1, 12; column 4, lines 60-69) is disposed at the center of the top portion of the reaction chamber (14; column 5, lines 1-2), as claimed by claim 7

Art Unit: 1763

- v. the top portion of the reaction chamber (14; column 5, lines 1-2; Figure 1) has a dome shape, as claimed b claim 15

Fukui does not teach that Fukui's distributor (7, Figure 1; column 4, lines 19-48) is connected to Fukui's gas injector (1, 12; column 4, lines 60-69) by screw threads. Fukui does not teach that the sidewall portion of the reaction chamber includes the substrate inlet/outlet through which a substrate transfers in and out of the reaction chamber, and wherein the bottom portion of the reaction chamber includes a gas exhaust port that emits air from the reaction chamber. Regarding Applicant's claim requirement of "a gas exhaust port that emits air" is a claim requirement of intended use. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ." (emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Exparte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Sajoto teaches a similar fluid distribution apparatus (Figure 17; column 13, lines 6-50) including a distributor (188,192, Figure 17) connected to a gas injector (193; Figure 17) by screw threads (not labeled). Sajoto further teaches that his sidewall portion (opened door on right side of Figure, not labeled; Figure 4) of Sajoto's reaction chamber (Figure 4) includes the substrate inlet/outlet (opened door on right side of Figure, not labeled; Figure 4) through which a substrate transfers in and out of the reaction chamber, and wherein the bottom portion (118; Figure 4) of

Art Unit: 1763

the reaction chamber includes a gas exhaust port (116; Figure 4) that emits process gas from the reaction chamber.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to affix Fukui's distributor and Fukui's gas injector by screw threads as taught by Sajoto, and to replace Fukui's reaction chamber (14; column 5, lines 1-2) with Sajoto's reaction chamber (Figure 4).

Motivation to affix Fukui's distributor and Fukui's gas injector by screw threads as taught by Sajoto is for securing Fukui's apparatus components as taught by Sajoto (column 6; lines 40-44), and to replace Fukui's reaction chamber (14; column 5, lines 1-2) with Sajoto's reaction chamber (Figure 4) is for conducting selective high vacuum processing as taught by Sajoto (column 3, lines 50-60).

5. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui et al (USPat. 5,002,928) and Sajoto (USPat. 6,056,823) in view of Voll et al (USPat. 4,439,401). Fukui and Sajoto are discussed above. Fukui and Sajoto do not teach injection holes that are arranged at the side of the second portion of the distributor as discussed above.

Voll teaches numerous gas distributors (Figures 1-10) including a distributor (Figure 4) which has a first portion (cylindrical portion of item 4) having a cylindrical portion and a second portion (truncated cone portion of item 4) shaped like a truncated cone with injection holes (3) that are arranged at the side of the second portion of the distributor.

Voll's gas distributor (Figure 4) further includes:

Art Unit: 1763

- i. wherein each injection hole (3) includes a large diameter part (open cone portion of 2) and a small diameter part (drilled portion 3 into 4) providing a velocity of source element which increases, as claimed by claim 5
- ii. wherein the large diameter part has a large diameter rather than the small diameter part, as claimed by claim 6

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Fukui and Sajoto's gas distributor with Voll's gas distributor.

Motivation for replacing Fukui and Sajoto's gas distributor with Voll's gas distributor is to provide an alternate means for distributing process gasses.

6. Claims 8-14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui et al (USPat. 5,002,928) and Sajoto (USPat. 6,056,823) in view of McMillin et al (USPat. 6,013,155). Fukui and Sajoto are discussed above. Fukui further teaches the injection of oxygen (air carrier gas; column 5, lines 19-25). However, Fukui and Sajoto do not teach plural distributors and a specific orientation of plural distributors. Further, Fukui and Sajoto do not teach that the size of his injection holes vary depending on his reaction space of his reaction chamber. Further, Fukui and Sajoto do not teach the substrate heating member includes both a heating element and an electric power source supply as one body. McMillin teaches a gas injection system (Title; Figure 10a) including plural distributors (180; Figure 10a) at specified orientations. Further, McMillin teaches the substrate heating member (130) which includes an electric power source supply (column 6, lines 10-15).

Art Unit: 1763

It would have been obvious to one of ordinary skill in the art at the time the invention was made to:

- i. reproduce Fukui and Sajoto's gas distributor, at specified orientations, as taught by McMillin - Motivation to reproduce Fukui's gas distributor, at specified orientations, as taught by McMillin is for providing "uniform high flow rate delivery of reactant gases" as taught by McMillin (column 4, lines 2-10). Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).
- ii. vary the sizes for Fukui and Sajoto's injection holes - Motivation to vary the sizes for Fukui's injection holes is to provide a desired flow characteristic for the injected gases. Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)
- iii. add a power source to Fukui and Sajoto's heater as taught by McMillin providing both a heating element and an electric power source supply as one body - Motivation to add a power source to Fukui's heater as taught by McMillin providing both a heating element and an electric power source supply as one body is to control the heating of the substrate.

Response to Arguments

7. Applicant's arguments filed June 1, 2004 have been fully considered but they are not persuasive.

Art Unit: 1763

8. With respect to the drawing objection of the prior action, Applicant's amendment to claim 16 has withdrawn the objection. Applicant states claim 16 is cancelled (page 7 under "Drawings"), however, as noted claim 16 remains pending as amended.

9. Applicant's remaining arguments are moot in view of the new grounds of rejection as necessitated by Applicant's amendments as filed.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.

Rudy Zervigon
7/9/4